CREATOR

VOLUME 18 NUMBER 4

A FISH'S TALE

Praise the LORD from the earth, you great sea creatures and all deeps (Psalm 148:7 ESV).

Fish . . . the sight of these graceful creatures brings calm to anxious people, and we seem to feel better when we watch them. Research has shown that our blood pressure decreases and our muscles relax if we observe them for any length of time.

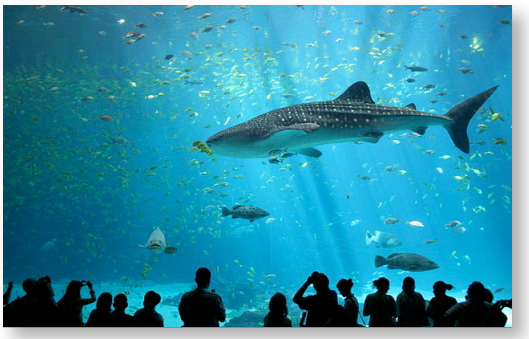
Increasingly, hospitals, doctors' offices, dentists, and schools have set up fish tanks to help ease the fear we often experience when we visit these places. And the folks who benefit most from aquariums are those most vulnerable in our society—children, the elderly, and people with mental challenges. It's not difficult to see *our Creator's tender mercy* in this!

But why should a display of fish have such a huge impact on our emotions? What is it about fish tanks that promotes a sense of peace and wonder? And what else do fish communicate to the humble in heart (Matt. 5:8)?

There is a story of a seminary professor who once asked his students to give him the exact number of fish caught by Christ's disciples in John 21 (they weren't allowed to look in their Bibles to get the answer). The seminary class moaned in unison at the request, which seemed quite trivial to them. The professor barked at his students, in response, and sharply rebuked his class for thinking that anything in the Bible was trivial. (By the way, the answer is 153 fish.)

If we expand this professor's reasoning, we can conclude that *all things of God* are important, including all things in creation—God's other great revelation of His glory (Psalm 19:1-4; Isaiah 6:3; Romans 1:20).

The number of fish species our Lord Jesus created is astounding—31,000 in total. This more than equals all mammal, bird, reptile and amphibian species put together. Why did Jesus make so many? Is there anything God is communicating to us about Himself through such a large number of creatures? Before we try to answer this question, let's first learn more about the ways our Lord Jesus Christ designed fish.



Georgia Aquarium

THE FISH JESUS MADE

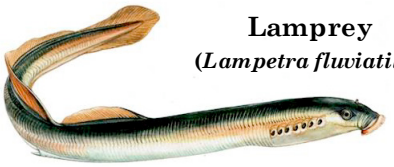
And God saw everything that he had made, and behold, it was very good (Genesis 1:31a ESV).

Scientists have placed fish into three groups:

1) Jawless fish—lampreys, hagfish
2) Cartilaginous fish—sharks, rays, skates
3) Bony fish
   - Lobe-finned bony fish
   - Ray-finned bony fish

Our Creator is ever inventive; He never ceases to amaze those with a childlike heart!

Lamprey
(*Lampetra fluviatilis*)



JAWLESS FISH
(skeleton also made of cartilage)

Some fish have no true bones, but a skeleton of cartilage (your nose is made of cartilage).

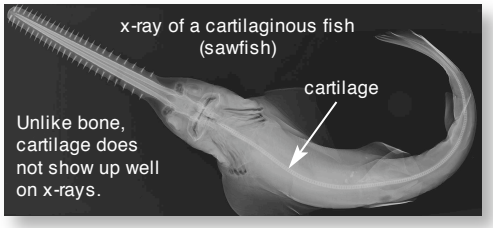
Stingray

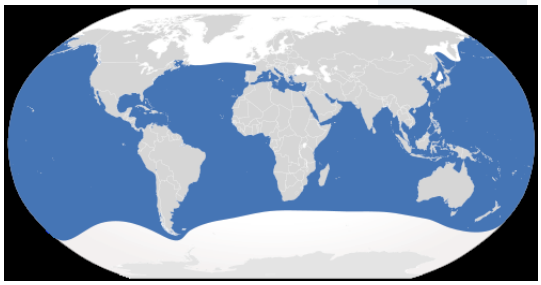
Unlike the fins of bony fish, the fins of a shark are stiff, and act like the rudder and keel of a sailboat.

CARTILAGINOUS FISH
(sharks, rays, skates)

Caribbean Reef Shark
(*Carcharhinus perezii*)

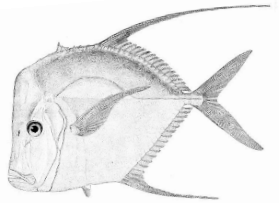
A sawfish is a type of ray. Christ fashioned its snout (rotrum) into the shape of a saw that can be used to defend itself or catch a prey.

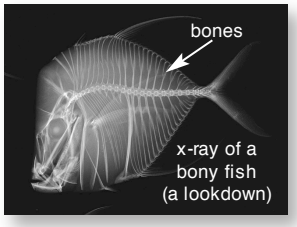




Distribution of sharks (blue) worldwide

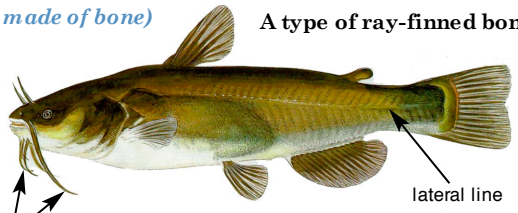
Lookdown Fish
(*Selene vomer*)

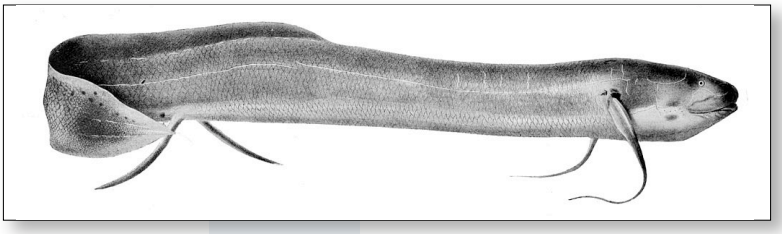




BONY FISH
(skeleton made of bone)

Catfish
A type of ray-finned bony fish





Lungfish
A type of lobe-finned bony fish

In addition to its gills, the lungfish possesses simple lungs, which it can use to breathe air when water becomes stagnant or scarce.

The lateral line, found on either side of a fish, acts like a motion detector. Fish know the exact location of the fish nearest them. This allows them to form tight schools.

UNDERWATER CHALLENGES

Ichthyologists (ick - thee - OL - uh - jists)—scientists dedicated to *the study of fish*—need to know a lot about water and its properties in order to understand the environment in which fish live and thrive.

ICHTHYOLOGY

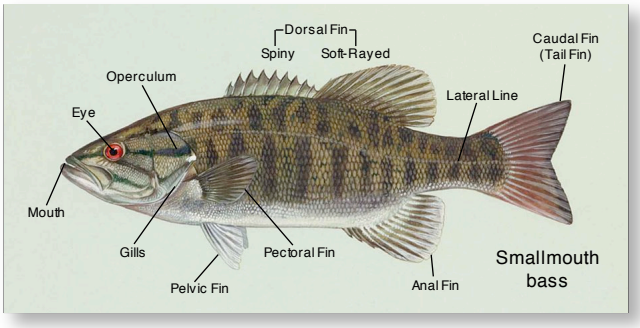
Ichthys (ΙΧΘΥΣ) is a Greek acronym that means, "Jesus Christ, God's Son, Savior" (Iēsous Christos, Theou Yios, Sōtēr or **Ἰ**ησοῦς **Χ**ριστός, **Θ**εοῦ **Υ**ἱός, **Σ**ωτήρ).

Ichthys is also the Greek word for "fish." Today, ichthyology is known as the study of fish, but it could properly be understood as "the study of Jesus." Early Christians combined ΙΧΘΥΣ with a symbol of a fish to represent their faith. Though most scientists don't realize it, *ichthyology* is *the study of Christ's glory,* seen so plainly in His unique watery creations!

Water is 800 times denser than air and it is this density that makes it difficult for any living thing to move quickly through water. Fish are ideally designed by God for aquatic life. He streamlined most fish and equipped them with powerful muscles so that they can propel themselves forward. Many fish also secrete mucus from their skin, which covers their body; this mucus makes a typical fish very slippery when wet. All these things help them move easily through water.[1]

1 Fast-moving fish have a *fusiform shape*, the same basic shape given to the fuselage of most airplanes.

Instead of arms and legs, Jesus equipped fish with fins fashioned from thin bones or cartilage, and attached them to fine muscles. These delicate fins allow fish to stop and turn, and provide stability as they swim.

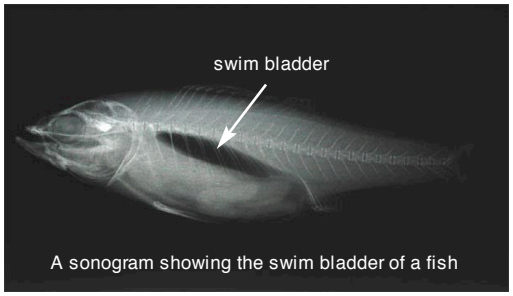


Another unique challenge for fully submerged animals is that water contains only a fraction of the oxygen that air does (air is 21% oxygen; water contains only 0.1 to 0.8% oxygen). God equipped fish with a means of extracting these tiny amounts of vital oxygen from water, through highly efficient gills.[2] Here we get a glimpse *Christ's infinite skill as our Creator!*

Fish are largely composed of muscle tissue, which is denser than water. This would normally cause them to sink, but God gave bony fish a one-of-a-kind organ called the *swim bladder*. The swim bladder is an air-filled sac located in the abdomen. When filled with the proper amount of air, fish have the same density as water and become weightless. Because of the swim bladder, a bony fish does not need to use its muscles to overcome the downward pull of gravity, as we do. It can remain at a certain depth in the water as long as it wants, without expending energy. Jesus also provides bony fish with *fine control* over their swim bladder, which allows them to rise or sink at will.

The swim bladder is also the reason for

2 A fish's gills are three times more efficient in extracting oxygen from water than our lungs are in extracting oxygen from air.



A sonogram showing the swim bladder of a fish

the undignified appearance of so many dead fish. When a bony fish dies, its swim bladder may become overinflated with air. This is why many fish can be found floating belly-up on the surface.

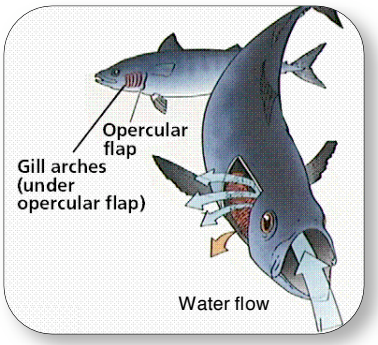
There's a group of fish known as the *cartilaginous fish* (sharks, rays, skates) that lack swim bladders. Instead, Jesus graciously saturated their livers with large amounts of a low-density oil called squalene to help these fish maintain buoyancy and prevent sinking.[3]

The LORD is good to all, and his mercy is over all that he has made (Psalm 145:9 ESV).

CREATOR OF FISH

Ruling over all of nature (Revelation 19:16), Christ holds three important titles: *Creator, Sovereign, and Redeemer*. It is as Creator that Jesus has fashioned everything in the universe. And as Sovereign, we see His absolute control over the lives and behaviors of all creatures. So, when we study a fish's anatomy, for instance, we're engaging upon a study of the mind of our Creator revealed in the way He made fish. And as we observe a fish's behavior, we come face-to-face with a display of Christ's sovereign rule. It is not just people who live and move and have their being in God (Acts 17:28). *So do fish*.

As already noted, fish must be highly skilled at extracting oxygen from water. This is accomplished by Christ's design of *gills*. Gills vary somewhat from one fish to another, but basically perform the same function. In bony fish, God installed what is called a "two-pump respiratory system." This means that Jesus designed the head (the muscles and the bones of the skull) to suck in water, and then push that same water over the fine leaves of its gills. A fish accomplishes this first task by opening its mouth and closing each *operculum*—the bony flap that protects the gills on either side of its head (see drawing on page 3). Once water has been taken in, the fish closes its mouth, opens each operculum, and forces the water over its gills and out of the body.



Some fish, like sharks, cannot actively pump water over their gills, but must constantly swim with their mouths open.

Jesus laced fish gills with countless tiny blood vessels—this brings the fish's blood in contact with the water so that oxygen can be absorbed from the water and into its bloodstream. And it is here that excess carbon dioxide moves from the fish's blood and into the surrounding water.

We've studied the senses (sight, hearing, sense of smell) of animals in other issues of ***CREATOR***,[4] so we'll limit our discussion here to things quite unique to fish. Like most animals, fish can taste. What's odd is that

3 Most animals sink because muscle tissue and bones are generally heavier than water. The reason most birds float is that their bones are extremely lightweight and their feathers are waterproof.

4 ***CREATOR*** Vol 2 Num 4, Vol 7 Num 3, Vol 16 Num 1 & 2; read a brief description of the fish's lateral line system at the bottom of page 2.

God placed taste buds on just about every part of a fish's body *except its tongue*. Many fish have taste buds lining their mouth and gills, the surface of their head, their fins, even their skin. Catfish have taste buds covering the long "whiskers" that project from around their mouth. These projections are known as *barbels*, lovingly given to catfish by God so that they might taste and feel their way around murky river bottoms (see picture of catfish on page 2).

Probably the most interesting and alien of all fish senses, however, is the ability of some fish to navigate muddy waters using electricity. Scientists call this sense *electroreception*.[5] Christ has gifted many species with this special sense, especially fish in the rivers of Africa and South America. You may have read about the electric eel (*Electrophorus electricus*) of the Amazon and Orinoco Rivers, and their ability to use current—produced by special muscle cells—to stun other animals. These same fish can generate a much lower current of electricity to create a three-dimensional electric field with which they can "see." When an eel approaches a submerged rock, log, or another animal, the eel's electrical field becomes distorted. It senses this distortion using tiny receptors in its skin. The electric eel can thus know what's going on around it even on a black, moonless night.

SOVEREIGN OVER FISH

Whatever the LORD pleases, he does, in heaven and on earth, in the seas and all deeps (Ps 135:6 ESV).

One of the ways we see Christ's sovereignty demonstrated as the Lord of lords (His absolute rule over nature) is in the way animals get nutrition. What an animal eats is determined by God (Job 38:41; Psalm 104:21). Fish, like all other creatures, need protein, fat, carbohydrates, vitamins and minerals in their diet in order to survive. And all fish fall into one of four categories depending upon what they eat:

- detritivores—fish that eat detritus [6]
- herbivores—fish that eat only underwater vegetation, or fruits and nuts that have fallen from trees
- carnivores—fish that eat only other animals, such as insects
- omnivores—fish that eat whatever they can find (plants or animals)

Most fish are carnivores, like sharks.

The way fish feed also varies. Some fish *gulp down* their food whole (northern pike); others take *big bites* (barracudas, piranhas);

Barracuda with prey

some are suction feeders (catfish), *sucking in* food; while others are filter feeders (whale sharks, manta rays), *sifting out* tiny prey in the water using their enormous, gaping mouth. These are the ways most fish eat, but kids, please don't try this at home!

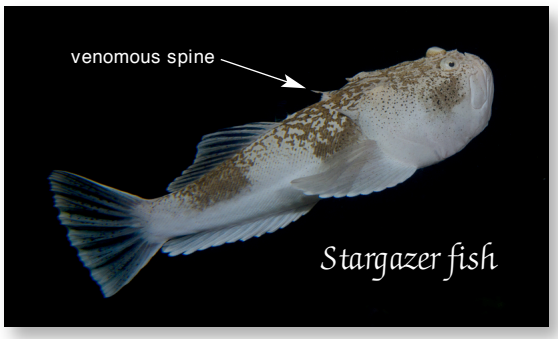
We also see *Christ's sovereign love and compassion* (Psalm 145:9) through the ways He protects fish from danger. He has armed some fish, for instance, with poison or venom. The second-most poisonous vertebrate on Earth is the puffer fish.[7] Its skin, liver, and

5 Sharks and rays also have sensors called the *ampullae of Lorenzini* located on their head that detect weak electrical fields produced by the muscles of other animals.

6 Detritus (dih - TRY - tus) is the organic material on the bottom of lakes and ponds created from decomposition of dead plants and animals.

7 The golden dart frog (*Phyllobates terribilis*) of South America is the most poisonous vertebrate—read about this frog in ***CREATOR*** 16-3.

eyes contain a deadly chemical known as tetrodotoxin, which is a thousand times more poisonous than cyanide, and powerful enough to kill 30 people. There's no known antidote. A fish like the puffer, is considered *poisonous* because God has placed toxin in its skin or tissues, but its *only dangerous if eaten*. A fish is considered *venomous* if it is able to *inject a toxin* into another animal using spines, as in the case of the reef stonefish and lionfish. Some consider the stargazer fish (*Uranoscopus* sp.) the



"fiercest thing in creation" because it is able to inject venom into its victim *and* apply an electric shock, at the same time. *Our Creator is someone to be properly feared, isn't He?!* [8]

Another of God's sovereign directives is whether a fish will live in salt water or fresh.[9] (Apart from salmon and eels, few fish can survive in both.) The biggest challenge to *saltwater fish* is that they are constantly losing water from their bodies because of the high concentration of salt in the sea. Essentially, salt water dehydrates living tissue. This would prove fatal to ocean fish if Jesus had not given them the ability to retain fresh water in their bodies. They do this by drinking large amounts of seawater throughout the day, while producing only tiny amounts of concentrated salty urine.

The problem of maintaining water balance in *freshwater fish* is exactly the opposite. Fish living in lakes, ponds, streams or rivers are continuously absorbing water through their skin and gills. So they must have a way of getting rid of excess water or risk water intoxication, which is fatal. They thus produce large amounts of dilute urine and almost never drink.

Fish are found just about everywhere on Earth where there is water. Many fish—like tuna and sharks—live their entire lives in the open ocean. And some of the most beautiful fish on Earth find food and shelter in the safety of coral reefs. The number of environments that fish call home is almost endless: freezing water (Antarctic icefish) or arid pools approaching 108° F/42° C (desert pupfish), small caves (eels), seaweed (seahorses), bottom silt (flounder), anemones (clownfish), the mouth of another fish (cleaner wrasses), 17,100 ft/5,200 m above sea level in the Himalayas (Tibetan stone loach), 5.2 miles/ 8,400 m below the surface of the ocean (*Abyssobrotula galatheae*), and in water four times saltier than the sea (*Tilapia* sp.). Study fish and you are studying the *incredible wisdom of Christ our Creator*.

PRINCE OF PEACE

The things of this world—power, wealth, pleasure, human wisdom—do not satisfy us (please read Ecclesiastes 2). But what does? We find the answer in Psalm 16:11—

You make known to me the path of life;
in your presence there is fullness of joy;
at your right hand are pleasures forevermore (ESV).

The glory of God is the only thing that truly satisfies (Jeremiah 9:23-24). So why then do aquarium fish calm our nerves and bring a

8 God also protects His fish by giving them camouflage, sharp teeth, quick reflexes, or the ability to increase greatly in size (the puffer).
9 Approximately 60% of fish live in salt water; 40% live in fresh water.

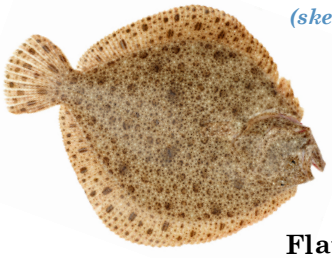
The skin of the moray eel is actually blue. Its green color comes from the thick, yellow mucus it secretes onto its skin (yellow + blue = green).

Eels

European eel
(*Anguilla anguilla*)

In addition to gills, an eel can absorb oxygen into its body directly through the skin.

BONY FISH
(skeleton made of bone)



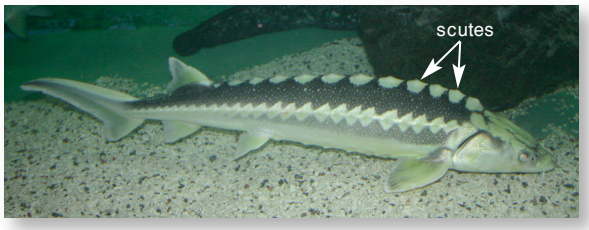
Flatfish

Flatfish include flounder, sole, turbot, plaice, and halibut. There are over 400 species of flatfish.

Flying Fish (juvenile)

This fish uses its pectoral fins to fly short distances over the surface of the ocean.

Sturgeon



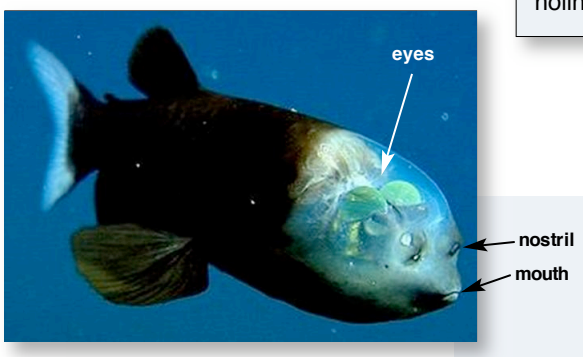
Sturgeon don't have true scales, but bony plates called scutes. Their eggs are sold as caviar.

Scientists have found a number of strange-looking fossil fish that are considered extinct. But we must be careful—the coelacanth is a fish that was once considered extinct, but living specimens have recently been found!

Fish are quite alien in appearance and live very different lives from us. They wonderfully reflect the holiness (other-worldliness) of God.

Anglerfish
(drying on racks in Iceland)

Barreleye Fish



Possibly the most bizarre thing in all creation is the barreleye fish (*Macropinna microstoma*) pictured above. *Jesus gave it a clear skull.* It has two green eyes that point straight up, and are contained within its "bubble" head.

Praise the LORD …
Sea monsters and all deeps
(Ps 148:7 NASB).

Many fish in the deep ocean are terrifying in appearance. They remind us to fear God rightly; after all, our Lord Jesus made them to look this way for a reason.

Stingray—© bthompso2001 / iStockphoto
Shark—© richcarey / iStockphoto
X-rays—Smithsonian
Jackfish—© stevedeneef / iStockphoto
Moray—National Aquarium
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Guiyu oneiros—Arthur Weasley
Barreleye—Monterey Bay Aquarium Research Institute
Anglerfish—© Patricia Hofmeester / dreamstime

Pages 2 and 7 form a "Fish Poster."

smile to our hearts? We can assume, in part, that it is for the same reason that people go out into nature to seek rest and relaxation; in creation we see the glory of God (Isaiah 6:3). But unlike much of nature—which flees from man and hides from our peering gaze (see Genesis 9:2)—tank fish are naked before our eyes and exposed to our examination; they thus seem to "speak" more plainly of Christ's glory because we can view them unobstructed. Add to this their graceful and fluid motions, and fish communicate a calm like nothing else in creation.

But why are children, the elderly, and those with mental challenges most likely to benefit from fish tanks? We again find the answer in God's Word:

"I dwell in the high and holy place, and also with him who is of a contrite and lowly spirit, to revive the spirit of the lowly, and to revive the heart of the contrite" (Isaiah 57:15 ESV).

Lowliness begets peace. Christ's greatest compassion and love—and the greatest revelation of His character—are toward those who are humbled before His Father. Jesus characterizes us as *fish to be caught* (Matt. 4:19). It's difficult to be proud when you're compared to a smelly, slippery fish! But early Christians embraced this comparison. Our Heavenly Father's relentless love drags (John 6:44) people out of the dangerous "river" of evil in which we live and away from the "ocean" of His wrath to come. He causes them to abide in "the still waters" of Christ instead. If you are a Christian, aren't you glad that you won't be consumed along with the enemies of God (Hebrews 10:27)? Isn't it comforting to know that God will protect and cherish us forever if we believe in His Son?

Though our eyes are naturally dull to the glory of Christ, His grace allows us to experience His peace through the things He has made, for He is *the Prince of Peace* (Isaiah 9:6). Even the Fall cannot prevent this wonderful attribute of His peace to shine from the things He has created.

Fish were made for God . . . as were we. They were made for His glory . . . as were we. And when we see and experience God's glory through the hand of Christ—through the things our Lord has fashioned—we sense purpose in our lives, and we are, at least at that moment in time, at peace. God's glory does this; it brings peace to our hearts and our minds especially when our spirit is right with God.

Augustine crystallizes our problem (and the solution) in his famous prayer: "You have created us so that our hearts find no rest until they rest in You."[10] Are you having difficulty finding peace and rest in this troubled world? Then join the humbled and the simple at heart (Matt. 5:3-12), and believe Christ is who He claimed to be. Trust Him.

Ultimately fish and aquariums won't do; we need more . . . much more. We need the One who created fish, Jesus Christ, the Lord of lords and Prince of Peace. ❑

He leadeth me beside the still waters.
He restoreth my soul (Psalm 23:2b-3a KJV).

10 Augustine, Bishop of Hippo, lived in North Africa, 354 – 430 A.D.

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